BEFORE THE UNITED STATES PATENT AND TRADEMARK OFFICE
BOARD OF APPEALS AND INTERFERENCES

In re Application of:	)	
	)	Group Art Unit: 2627
ROBERT GLENN BISKEBORN	)	
	)	Confirmation No.: 7827
SERIAL NO.: 10/754,392	)	
	)	Examiner: Daniell L. Negron
FILED: January 9, 2004	)	
	)	BEA920030016US1
FOR: FLY HEIGHT EXTRACTION SYSTEM	)	

Commissioner for Patents
P. O. Box 1450
Alexandria, VA 22313-1450

Sir:

BRIEF ON APPEAL

This is an appeal from the Primary Examiner of Group Art Unit 2627 refusing claims 1-7, 10, 21-26 and 28 set forth in the attached CLAIMS APPENDIX. The date of the final rejection is July 22, 2008 and the Notice of Appeal was timely filed on August 28, 2008.

REAL PARTY IN INTEREST

International Business Machines Corporation

RELATED APPEALS AND INTERFERENCES

None.

STATUS OF THE CLAIMS

Claims 1-10, 21-26 and 28-30 are in the application.

Claims 11-20, 27 and 31-40 are canceled.

Claims 8, 9, 29 and 30 are withdrawn.

Claims 1-7, 10, 21-26 and 28 are rejected.

Claims 1-7, 10, 21-26 and 28 are appealed.

STATUS OF AMENDMENTS

No amendments have been made subsequent to the final rejection.

SUMMARY OF THE CLAIMED SUBJECT MATTER

The claimed subject matter pertains to monitoring fly height between a magnetic recording medium and a transducing head. According to a first disclosed embodiment supporting one or more of the claims, a magnetic spacing change value is calculated using media noise on the recording medium (instead of prerecorded tones) to provide a broadband frequency distribution that results in improved magnetic spacing calculation accuracy. According to a second disclosed embodiment supporting one or more of the claims, a magnetic spacing change value is acquired by any suitable method but is adjusted as necessary to reflect transducing head wear, thus improving the accuracy of fly height (FH) monitoring by taking

into account the signal loss that is attributable to wear. In this way, a basic understanding of the mechanism causing magnetic spacing change can be achieved.

References to Specification and Drawings For Independent Claims

The independent claims find support in the specification and drawings in at least the locations identified below.

Independent Claim 1

A method for monitoring fly height between a magnetic recording medium and a transducing head [page 3, lines 12-13], comprising:

calculating a magnetic spacing change value relative to the recording medium and the transducing head [page 10, lines 7-12; Fig. 1B]; and

adjusting the magnetic spacing change value as necessary to reflect transducing head wear [page 10, lines 12-16; page 15, line 14 – page 17, line 3; Figs. 1B and 6-7].

Independent Claim 21

A method for monitoring fly height between a magnetic recording medium and a transducing head [page 3, lines 12-13], comprising:

sensing media noise on the recording medium [page 10, lines 7-10; page 10, line 20 – page 13, line 6; page 17, lines 4-17; Figs. 6-10];

calculating a magnetic spacing change value relative to the recording medium and the transducing head [page 10, lines 7-12; page 13, line 7 – page 15, line 13; page 17, lines 4-17; Figs. 1B, 6-10]; and

adjusting the magnetic spacing change value as necessary to reflect transducing head wear [page 10, lines 12-16; page 15, line 14 – page 17, line 3; page 17, lines 17-19; Figs. 1B and 6-7 and 10].

GROUNDS FOR REJECTION TO BE REVIEWED ON APPEAL

Claim 1 was rejected under 35 U.S.C. § 102, as being anticipated by Smith (US 2002/0197936).

Claims 2 and 4-7 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Smith (US 2002/0197936) in view of Dakroub et al. (US 7113354).

Claim 3 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Smith (US 2002/0197936) in view of Dakroub et al. (US 7113354) and further in view of Abraham et al. (US 6239,936).

Claim 10 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Smith (US 2002/0197936) in view of Muranushi et al. (US 5153785).

Claims 21, 22, 24-26 and 28 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Dakroub et al. (US 7113354) and in view of Smith (US 2002/0197936).

Claim 23 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Dakroub et al. (US 7113354) as modified by Smith (US 2002/0197936) and further in view of Abraham et al. (US 6239,936).

ARGUMENT

Rejection Under 35 U.S.C. §102

Claim 1 was rejected under 35 U.S.C. § 102, as being anticipated by Smith (US 2002/0197936). This rejection is curious because applicant's undersigned representative

conducted a telephonic interview with the Examiner on March 17, 2008 in which it was tentatively agreed that Claim 1 is not anticipated by Smith. The final office action does not explain what changed the examiner's mind. As will now be discussed, the conclusion of no anticipation as discussed in the interview represents the correct analysis.

Legal Framework for Anticipation Analysis

The test for anticipation under 35 U.S.C. § 102 is outlined in MPEP 2131, as follows:

"'A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.' Verdegaal Bros. v. Union Oil Co. of California, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987)."

* * *

"' The identical invention must be shown in as complete detail as is contained in the ... claim.' Richardson v. Suzuki Motor Co., 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989). The elements must be arranged as required by the claim, but this is not an ipsissimis verbis test, i.e., identity of terminology is not required. In re Bond, 910 F.2d 831, 15 USPQ2d 1566 (Fed. Cir. 1990)."

In other words, an anticipation reference faces a two-prong requirement. First, the reference must disclose each element of the claim under consideration. W.L. Gore & Assocs. v. Garlock, 721 F.2d 1540, 220 U.S.P.Q. 303 (Fed. Cir. 1983) (cert. denied, 469 U.S. 851 (1984). Second, the reference may not disclose the claim elements in isolation -- they must be "arranged as in the claim." Lindemann Maschinenfabrik GmbH v. American Hoist & Derrick Co., 730 F.2d 1452, 221 U.S.P.Q. 481, 485 (Fed. Cir. 1984). As part of the anticipation analysis, the claim language must be read in light of the specification as it would be interpreted by one of ordinary skill in the art. In re Bond, 910 F.2d 83, 15 U.S.P.Q. 2d (Fed. Cir. 1990).

It is the Examiner's burden to establish *prima facie* anticipation. In re Piasecki, 223 U.S.P.Q. 785, 778 (Fed. Cir. 1984) ("As adapted to ex parte procedure, Graham is interpreted

as continuing to place the 'burden of proof on the Patent Office which requires it to produce the factual basis for its rejection of an application under sections 102 and 103" (quoting In re Warner, 379 F.2d 1011, 154 U.S.P.Q. 173, 178 (CCPA 1967) (cert. denied 389 U.S. 1057 (1968))). As stated by the Board, "[i]t is by now well settled that the burden of establishing a *prima facie* case of anticipation resides with the Patent and Trademark Office." In re Skinner, 2, U.S.P.Q. 1788, 1788-89 (B.P.A.I. 1986). See also In re Oetiker, 997 F.2d 1443, 24 U.S.P.Q. 2d 1443 (Fed. Cir. 1982) ("If the examination at the initial stage does not produce a prima facie case of unpatentability, then without more the applicant is entitled to grant of a patent.").

As part of the Examiner's burden, the claims must be affirmatively construed as part of the anticipation analysis to facilitate proper review of the rejection. As set forth in Gechter v. Davidson, 116 F.3d 1454, 1458, 43 U.S.P.Q. 2d 1030, 1032 (Fed. Cir. 1997):

> "Implicit in our review of the Board's anticipation analysis is that the claim must first have been correctly construed to define the scope and meaning of each contested limitation. See, e.g., In re Paulsen, 30 F.3d 1475, 1479, 31 USPQ2d 1671, 1674 (Fed. Cir. 1994) ('[T]o properly compare [an allegedly anticipatory prior art reference] with the claims at issue, we must construe the term 'computer' to ascertain its scope and meaning.')."
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> * * *
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> "In sum, we hold that the Board is required to set forth in its opinions specific findings of fact and conclusions of law adequate to form a basis for our review. In particular, we expect that the Board's anticipation analysis be conducted on a limitation by limitation basis, with specific fact findings for each contested limitation and satisfactory explanations for such findings."

It is also a requirement of 37 C.F.R. § 1.104(c)(2) that:

> "In rejecting claims for want of novelty or for obviousness, the examiner must cite the best references at his or her command. When a reference is complex or shows or describes inventions other than that claimed by the applicant, the particular part relied on must be designated as nearly as practicable. The pertinence of each reference, if not apparent, must be clearly explained and each rejected claim specified."

As is the case with establishing prima facie obviousness, it is also reasonable to expect that the Examiner should properly explain a reference relied on for anticipation. This includes presenting an overview of the subject matter of the reference, and an explanation as to how each portion of the reference relied on as disclosing a claim element operates and why it is considered to disclose the claim element. As set forth in MPEP § 707.05:

> During the examination of an application or reexamination of a patent, the examiner should cite appropriate prior art which is nearest to the subject matter defined in the claims. When such prior art is cited, its pertinence should be explained.

Claim 1 cannot be anticipated by Smith

Smith is directed to a method for burnishing a rear slider pad during the manufacture of a disk drive in order to aerodynamically profile the pad and reduce its height to achieve a desired slider fly height relative to the disk medium. This reference cannot anticipate claim 1 because it does not disclose the subject matter set forth in the second paragraph that reads "adjusting the magnetic spacing change value as necessary to reflect transducing head wear." Paragraph [0028] of Smith is cited as disclosing this subject matter. However, paragraph [0028] is part of a discussion of Smith's Fig. 4, which discloses the process by which Smith's rear slider pad 54 is burnished during drive manufacture. Initially, the pad height is larger than needed and the method involves burnishing the pad by rubbing it across the disk in a radial reciprocating fashion. Repeated spacing measurements are made (e.g., using magnetic spacing between the slider's read or write transducers and the medium) until the final pad height is reached. When any two consecutive magnetic spacing measurements are made in Smith to provide a magnetic spacing change value, there is no further step of "adjusting the magnetic

spacing change value as necessary to reflect transducing head wear," as recited in the second paragraph of claim 1. As set forth in paragraphs [0027] and [0028] of Smith, none of the spacing measurements are adjusted. Rather, they are simply used to see how much more of the slider's rear pad 54 needs to be removed as part of the burnishing process.

The subject matter of claim 1 is directed to a method in which is the accuracy of fly height measurements between a transducer and a medium is improved. Fly height is the actual physical separation between the body of a transducer and the medium. As described in the Background section of the present application, one way to determine changes in fly height is to measure the magnetic spacing between the medium and a sensor portion of the transducer, such as a read sensor, and determine the change in magnetic spacing relative to a reference measurement. The change in magnetic spacing can be determined using the Wallace Spacing Loss relationship. However, as stated on page 2, lines 16-20 of the specification (which discusses fly height measurement in the context of a tape head interacting with a tape medium), "the change in magnetic spacing determined by the Wallace Spacing Loss relationship will not indicate change in true fly height if the read sensor (or the write coil element) becomes recessed from the tape bearing surface." This condition is shown in applicant's Fig. 1B. As can be seen, the magnetic spacing measurement does not represent the true fly height of the transducer because the sensor portion of the transducer has recessed from the tape bearing surface due to wear. The subject matter of claim 1 is based on applicant's recognition of this phenomenon. In particular, the second paragraph of claim 1 accounts for transducer head wear and adjusts the magnetic spacing change value accordingly. An example is given on page 16 of the specification wherein the change in fly height ΔFH is determined to be the difference between

the change in magnetic spacing ΔMS and the change in sensor recession ΔR (e.g., as measured by a change in stripe height) according to the relationship ΔFH = ΔMS – ΔR. In tape drives, the fly height is ideally zero because the head should bear against the tape medium. However, a build up of debris on the tape medium can result in the fly height increasing to some positive value. At the same time, head wear can cause the sensor portion of the transducer to recess from the transducer's tape bearing surface. When a magnetic spacing measurement is made, it is important to know whether an increase in magnetic spacing is due to an actual change in fly height that may be caused by debris build or by sensor recession. The former can usually be corrected by cleaning the tape head while the latter may require head replacement.

Smith does not disclose any method of adjusting magnetic spacing to account for transducer head wear in order to improve fly height measurement accuracy. As discussed above, Smith simply uses successive magnetic spacing measurements as a way to monitor a burnishing process that removes slider pad material. Insofar as the burnishing process is designed to remove both sensor material and the surrounding material of the rear pad 54, there is no issue of the magnetic spacing measurement not being accurate due to differential recessing of a sensor from the surrounding head material. Smith takes magnetic spacing measurements "as is" and uses them to determine when the read pad 54 has reached its ideal manufacturing height so that the burnishing process may be terminated.

Paragraph 11 of the final Office Action appears to concede this point. The Examiner acknowledges that paragraph [0028] of Smith merely discloses "evaluating" spacing measurements. However, the Examiner goes on to state that "evaluating" a spacing measurement is the same thing as "adjusting" a spacing measurement, as claimed. The

Examiner offers no evidence (e.g., dictionary definitions) to back up this assertion. From applicant's viewpoint, to equate "evaluating" a value with "adjusting" a value is a rather bizarre interpretation of the English language, and goes far beyond any reasonable interpretation of claim 1, or the disclosure Smith. As such, the Smith reference cannot anticipate claim 1 under 35 U.S.C. §102.

Rejections Under 35 U.S.C. § 103(a)

Legal Framework for Obviousness Analysis

Section 103 requires the issuance of a patent unless "the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains." *KSR Int'l Co. v. Teleflex Inc.*, 127 S.Ct. 1727, 1734, 82 USPQ2d 1385, 1391 (2007). The question of obviousness is resolved on the basis of underlying factual determinations including (1) the scope and content of the prior art, (2) any differences between the claimed subject matter and the prior art, (3) the level of skill in the art, and (4) where in evidence, so-called secondary considerations. *Graham v. John Deere Co.*, 383 U.S. 1, 17-18, 148 USPQ 459, 467 (1966). See also *KSR*, 127 S.Ct. at 1734, 82 USPQ2d at 1391 ("While the sequence of these questions might be reordered in any particular case, the [Graham] factors continue to define the inquiry that controls.")

The USPTO bears the initial burden of establishing that a claimed invention is prima facie obvious. *In re Piasecki*, 745 F.2d 1468, 1472, 223 USPQ 785, 788 (Fed. Cir. 1984). To establish a prima facie case of obviousness, the USPTO must satisfy three requirements. First, it must "identify a reason that would have prompted a person of ordinary skill in the relevant

art to combine the elements in the way the claimed new invention does." *KSR Int'l Co. v. Teleflex Inc., supra.* Second, the proposed modification of the prior art must have had a reasonable expectation of success, determined from the vantage point of the artisan at the time the invention was made. *Amgen, Inc. v. Chugai Pharm. Co.*, 927 F.2d 1200, 1209, 18 USPQ2d 1016, 1023 (Fed. Cir. 1991). Third, the prior art reference or combination of references must teach or suggest all the limitations of the claims. *In re Wilson*, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970).

On October 10, 2007, the USPTO issued new examination guidelines for determining obviousness under 35 U.S.C. 103 in view of the *KSR* case. Federal Register, Vol. 72, No. 195, pages 57526-57535. The examination guidelines emphasize that "the focus when making a determination of obviousness should be on what a person of ordinary skill in the pertinent art would have known at the time of the invention, and on what such a person would have reasonably expected to have been able to do in view of that knowledge." Fed. Reg., Vol, 72, No. 195 at page 57527. The examination guidelines point out that "[i]n certain circumstances, it may also be important to include explicit findings as to how a person of ordinary skill would have understood prior art teachings, or what a person of ordinary skill would have known or could have done."

Claims 2 and 4-7

Claims 2 and 4-7 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Smith (US 2002/0197936) in view of Dakroub et al. (US 7113354).

Claim 2

Claim 2 depends from claim 1 and further recites "wherein said magnetic spacing change value is calculated from media noise sensed on the recording medium." The final rejection states that Smith discloses the subject matter of claim 1 and Dakroub et al. discloses the additional subject matter of claim 2.

Scope and Content of Smith

The scope and content of Smith is discussed above in connection with the anticipation rejection of claim 1.

Differences between Smith and Claim 2

As previously discussed, Smith does not disclose "adjusting the magnetic spacing change value as necessary to reflect transducing head wear," as recited in paragraph 2 of claim 1.

Scope and Content of Dakroub et al.

Dakroub et al. is directed to a technique for determining, from the waveform peak of a white noise signal, when a disk drive head crash is imminent. See Fig. 3 and column 5, lines 10-19. The white noise is provided by a readback signal obtained from a nonrecorded region of the disk. As shown in Fig. 3, a peak amplitude of the white noise waveform amplitude is reached just prior to the head landing on the disk surface.

Differences between Dakroub et al. and Claim 2

In Dakroub, only a landing noise signature is determined from a media noise signal. There is no calculation of a magnetic spacing change value from media noise, as recited in claim 2.

Claim 2 cannot be obvious from Smith and Dakroub et al.

Applicant submits that the foregoing differences between the claim 2 and the applied references preclude a finding of prima facie obviousness. Both Smith and Dakroub et al. fail to teach or suggest any form of adjusting a magnetic spacing change value, whether using media noise or otherwise. KSR left undisturbed the requirement that the references must teach or suggest *all* of the claim limitations. This is mandated by section 103, which requires consideration of the prior art in relation to the claimed subject matter "as a whole." Accordingly, prima facie obviousness has not been established and the rejection of claim 2 under 35 U.S.C. §103 should be reversed.

Claim 4

Claim 4 depends from claim 2 and further recites "wherein said magnetic spacing change value is calculated after decomposing said media noise into frequency components using a Fast Fourier Transform conversion process." Claim 4 should be allowable based on its dependence from claims 1 and 2.

Claim 5

Claim 5 depends from claim 2 and further recites "wherein said magnetic spacing change value is calculated after decomposing said media noise into frequency components using a spectrum analyzing process." Claim 5 should be allowable based on its dependence from claims 1 and 2.

Claim 6

Claim 6 depends from claim 2 and further recites "wherein said magnetic spacing change value is calculated using at least two frequency components of said media noise." Claim 6 should be allowable based on its dependence from claims 1 and 2.

Claim 7

Claim 7 depends from claim 1 and further recites "wherein transducing head wear is determined by measuring transducing head signal amplitude after accounting for changes in amplitude due to conditions other than transducing head wear." An example of such a condition discussed in applicant's specification is temperature (which can affect readback signal amplitude). Claim 7 should be allowable based on its dependence from claim 1. In addition, Smith measures transducing head wear to monitor a head burnishing process and thus is not concerned with conditions other than transducing head wear. Dakroub et al. measures signal amplitude in order to determine a waveform characteristic that indicates an impending head crash. In Smith, the head is already on the medium and thus head crashing is irrelevant. Moreover, claim 7 is directed to one way of measuring transducer head wear in the context of claim 1, which is directed to adjusting a magnetic spacing change value to account for head wear. As discussed above in connection with the anticipation rejection of claim 1, Smith is not interested in adjusting a magnetic spacing change value to account for head wear.

Claim 3

Claim 3 was rejected under 35 U.S.C. §103(a) as being unpatentable over Smith (US 2002/0197936) in view of Dakroub et al. (US 7113354) and further in view of Abraham et al. (US 6239,936). Claim 3 depends from claim 2 and further recites "wherein said media noise is

processed so as to be substantially free of electronic power spectra noise generated by read channel circuitry associated with the transducing head."

Scope and Content of Abraham et al.

Abraham et al. is directed to a technique for calculating the thermal response of an MR element using a calibrated thermal spacing signal. Column 3, lines 14-16. Column 4, lines 28-31 states that the disclosed technique "may be advantageously employed to survey the surface topography of a data storage disk and to accurately and reliably detect disk surface features and defects." Column 4, lines 40-43 states that "[i]n accordance with an embodiment, the present invention obviates the traditional approach of using a magnetic signal induced in the MR element to analyze a disk surface." Instead, as shown in Fig. 2 of Abraham et al., a thermal signal is used.

Differences between Abraham et al. and Claim 3

Abraham et al. does not disclose processing media noise so as to be substantially free of electronic power spectra noise generated by read channel circuitry associated with the transducing head. Column 10, lines 35-42 mentions electronic noise compensation. However, this passage is referring to removing electronic noise from a thermal signal, not from a media noise signal as recited in claim 3. In particular, column 10, lines 35-42 states that [b]y time-averaging the thermal spacing signal, components such as electronic noise approach zero and can be separated from the component of thermal response induced by disk topography."

Claim 3 cannot be obvious from Smith, Dakroub et al. and Abraham

Claim 3 should be allowable based on its dependence from claims 1 and 2. In addition, there is no teaching or suggestion of compensating for electronic noise in a media noise signal.

Accordingly, prima facie obviousness has not been established and the rejection of claim 3 under 35 U.S.C. §103 should be reversed.

Claim 10

Claim 10 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Smith (US 2002/0197936) in view of Muranushi et al. (US 5153785). Claim 10 depends from claim 1 and further recites "wherein the magnetic recording medium comprises magnetic tape and the transducing head is a tape head." Claim 10 should be allowable based on its dependence from claim 1.

Claims 21, 22, 24-26 and 28

Claims 21, 22, 24-26 and 28 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Dakroub et al. (US 7113354) and in view of Smith (US 2002/0197936).

Claim 21

Dakroub et al. does not disclose the subject matter set forth in the clause that reads "calculating a magnetic spacing change value from the media noise." As previously discussed, the technique disclosed in Dakroub et al. can only detect fly height in the sense of determining from the shape of a white noise readback signal that a head crash is imminent. See Fig. 3 and column 5, lines 10-19. Only a landing noise signature is determined. There is no calculation of a magnetic spacing change value from media noise. As also previously discussed, Dakroub et al. and Smith do not disclose or suggest "adjusting said magnetic spacing change value as necessary to reflect transducing head wear." Accordingly, prima facie obviousness has not been established and the rejection of claim 21 under 35 U.S.C. §103 should be reversed.

Claim 22

Claim 22 depends from claim 21 and further recites "wherein said media noise is generated by forming a substantially random pattern of magnetic domains on the recording medium using one of an A.C. erasure technique, a D.C. erasure technique or a bulk erasure technique." Claim 22 should be allowable based on its dependence from claim 21. In addition, Dakroub et al. and Smith contain no teaching or suggestion of using an erasure technique to form noise generating magnetic domains. Dakroub et al. simply discusses using a nonrecorded portion of a medium. Smith does not disclose media noise.

Claim 24

Claim 24 depends from claim 21 and additionally recites "wherein said magnetic spacing change value is calculated after decomposing said media noise into frequency components using a Fast Fourier Transform conversion process." Claim 24 should be allowable based on its dependence from claim 21. As stated, Dakroub et al. does not disclose calculating a magnetic spacing change value and thus would not have suggested the magnetic spacing change calculation set forth in claim 24.

Claim 25

Claim 25 depends from claim 21 and additionally recites "wherein said magnetic spacing change value is calculated after decomposing said media noise into frequency components using a spectrum analyzing process." Claim 25 should be allowable based on its dependence from claim 21. As stated, Dakroub et al. does not disclose calculating a magnetic spacing change value and thus would not have suggested the magnetic spacing change calculation set forth in claim 25.

Claim 26

Claim 26 depends from claim 21 and additionally recites that "said magnetic spacing change value is calculated using at least two frequency components of said media noise." Claim 26 should be allowable based on its dependence from claim 21. As stated, Dakroub et al. does not disclose calculating a magnetic spacing change value and thus would not have suggested the magnetic spacing change calculation set forth in claim 26.

Claim 28

Claim 28 depends from claim 21 and additionally recites that "wherein transducing head wear is determined by measuring transducing head signal amplitude after accounting for changes in amplitude due to conditions other than head wear." Claim 28 should be allowable based on its dependence from claim 21. Claim 28 should be additionally allowable because it recites that "transducing head wear is determined by measuring transducing head signal amplitude after accounting for changes in amplitude due to conditions other than head wear." As discussed above in connection with claim 7, an example of such a condition discussed in applicant's specification is temperature (which can affect readback signal amplitude). Smith measures transducing head wear to monitor a head burnishing process and thus is not concerned with conditions other than transducing head wear. Dakroub et al. measures signal amplitude in order to determine a waveform characteristic that indicates an impending head crash. In Smith, the head is already on the medium and thus head crashing is irrelevant. Moreover, claim 28 is directed to one way of measuring transducer head wear in the context of claim 27, which is directed to adjusting a magnetic spacing change value to account for head

wear. As discussed above, Smith is not interested in adjusting a magnetic spacing change value to account for head wear.

Claim 23

Claim 23 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Dakroub et al. (US 7113354) as modified by Smith (US 2002/0197936) and further in view of Abraham et al. (US 6239,936). Claim 23 depends from claim 21 and further recites "wherein said media noise is processed so as to be substantially free of electronic power spectra noise generated by read channel circuitry associated with the transducing head." Claim 23 should be allowable based on its dependence from claim 21. Moreover, Abraham discloses removing electronic noise from a thermal signal not a media noise signal.

CONCLUSION

Based on the foregoing, applicant submits that the claims in the present application clearly and patentably distinguish over the cited references. It is therefore respectfully requested that the Examiner be reversed and directed to pass the application to issue.

The required Appeal Brief fee has been paid.

Respectfully submitted,

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CLAIMS APPENDIX

Claim 1 (original): A method for monitoring fly height between a magnetic recording medium and a transducing head, comprising:

calculating a magnetic spacing change value relative to the recording medium and the transducing head; and

adjusting the magnetic spacing change value as necessary to reflect transducing head wear.

Claim 2 (original): A method in accordance with Claim 1 wherein said magnetic spacing change value is calculated from media noise sensed on the recording medium.

Claim 3 (original): A method in accordance with Claim 2 wherein said media noise is processed so as to be substantially free of electronic power spectra noise generated by read channel circuitry associated with the transducing head.

Claim 4 (original): A method in accordance with Claim 2 wherein said magnetic spacing change value is calculated after decomposing said media noise into frequency components using a Fast Fourier Transform conversion process.

Claim 5 (original): A method in accordance with Claim 2 wherein said magnetic spacing change value is calculated after decomposing said media noise into frequency components using a spectrum analyzing process.

Claim 6 (original): A method in accordance with Claim 2 wherein said magnetic spacing change value is calculated using at least two frequency components of said media noise.

Claim 7 (original): A method in accordance with Claim 1 wherein transducing head wear is determined by measuring transducing head signal amplitude after accounting for changes in amplitude due to conditions other than transducing head wear.

Claim 8 (withdrawn): A method in accordance with Claim 1 wherein the transducing head comprises a magnetoresistive (MR) read sensor and transducing head wear is determined by measuring a change in MR stripe height of the read sensor while using measured resistance of a write coil component of the transducing head to correct for temperature drift.

Claim 9 (withdrawn): A method in accordance with Claim 8 wherein a change in fly height is calculated as the difference between the magnetic spacing change value and the change in MR stripe height.

Claim 10 (original): A method in accordance with Claim 1 wherein the magnetic recording medium comprises magnetic tape and the transducing head is a tape head.

Claims 11-20 (canceled).

Claim 21 (previously presented): A method for monitoring fly height between a magnetic recording medium and a transducing head, comprising:

sensing media noise on the recording medium;

calculating a magnetic spacing change value from the media noise; and

adjusting said magnetic spacing change value as necessary to reflect transducing head wear.

Claim 22 (original): A method in accordance with Claim 21 wherein said media noise is generated by forming a substantially random pattern of magnetic domains on the recording medium using one of an A.C. erasure technique, a D.C. erasure technique or a bulk erasure technique.

Claim 23 (original): A method in accordance with Claim 21 wherein said media noise is processed so as to be substantially free of electronic power spectra noise generated by read channel circuitry associated with the transducing head.

Claim 24 (original): A method in accordance with Claim 21 wherein said magnetic spacing change value is calculated after decomposing said media noise into frequency components using a Fast Fourier Transform conversion process.

Claim 25 (original): A method in accordance with Claim 21 wherein said magnetic spacing change value is calculated after decomposing said media noise into frequency components using a spectrum analyzing process.

Claim 26 (original): A method in accordance with Claim 21 wherein said magnetic spacing change value is calculated using at least two frequency components of said media noise.

Claim 27 (canceled).

Claim 28 (previously presented): A method in accordance with Claim 21 wherein transducing head wear is determined by measuring transducing head signal amplitude after accounting for changes in amplitude due to conditions other than head wear.

Claim 29 (withdrawn): A method in accordance with Claim 21 wherein the transducing head comprises a magnetoresistive (MR) read sensor and transducing head wear is determined by measuring a change in MR stripe height of the read sensor while using measured resistance of a write coil component of the transducing head to correct for temperature drift.

Claim 30 (withdrawn): A method in accordance with Claim 29 wherein a change in fly height is calculated as the difference between the magnetic spacing change value and the change in MR stripe height.

Claims 31-40 (canceled).

EVIDENCE APPENDIX

NONE

RELATED PROCEEDINGS APPENDIX

NONE